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NAME OF AUTHOR . GERRY MARVIN SWAN
TITLE OF THESIS . TRAINING RELATED PREFERENCES OF UNIVERSITY
 . TRACK AND FIELD ATHLETES

DEGREE FOR WHICH THESIS WAS PRESENTED . MASTER OF ARTS
YEAR THIS DEGREE GRANTED . 1979

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TRAINING RELATED PREFERENCES OF
UNIVERSITY TRACK AND FIELD ATHLETES

by



GERRY MARVIN SWAN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
AND RESEARCH IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

DEPARTMENT OF PHYSICAL EDUCATION

EDMONTON, ALBERTA

FALL, 1979

70F-180

THE UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled TRAINING RELATED PREFERENCES OF UNIVERSITY TRACK AND FIELD ATHLETES submitted by GERRY MARVIN SWAN in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

The purpose of the study was to examine the relationship between track and field athletes' preferences and what actually occurs, on three variables, in the training environment. The three variables were FEEDBACK, COACTIVE SITUATIONS and PROGRAM INVOLVEMENT. The male and female experimental groups consisted of twenty and sixteen subjects respectively.

True Agreement and Agreement Displacement coefficients and t-values were used to determine the relationship between preferences and actual occurrences. The difference between male and female coefficients, on each variable, was also calculated.

True Agreement results, for the male group, revealed no significant relationship between preferences and actual occurrences on FEEDBACK and PROGRAM INVOLVEMENT. A significant relationship occurred on COACTIVE SITUATIONS. The True Agreement results, for the female group, revealed no significant relationship between athletes' preferences and actual occurrences on the three variables.

The Agreement Displacement results, for the male group, produced a significant relationship between preferences and actual occurrences on FEEDBACK and COACTIVE SITUATIONS. No significant relationship was found on PROGRAM INVOLVEMENT. The female group's Agreement Displacement results revealed significant relationships on all three variables.

On the coach related variables of FEEDBACK and PROGRAM INVOLVEMENT, the male group had smaller, and significantly different, coefficients to the female group. On the COACTIVE SITUATIONS variable,

which involved training situations with athletic peers, the male group had a larger, but not significantly different, coefficient than the female group.

The male group, compared to the female group, was, on the average, older; had more experience in track and field; trained longer; spent a higher percentage of the time, dedicated to their events, in the training environment; and had a higher percentage of athletes who had performed in senior provincial, national and/or international competition.

The aforementioned differences of training time, athletic experience, et cetera between male and female groups, possibly account for the differences between male and female coefficients. It is possible that the coach has to make more efforts to satisfy the preferences of the more experienced, et cetera male group. On the COACTIVE SITUATIONS variable, subjects were able to satisfy their preferences to a greater degree.

ACKNOWLEDGEMENTS

The author wishes to thank Dr. R. B. Alderman (Chairman), Dr. M. F. R. Smith and, especially, Dr. R. D. Steadward who served as members of his thesis committee.

My gratitude is extended to those University of Alberta track and field coaches and athletes who contributed to the preparation of the questionnaire, and to those University of Alberta track and field athletes who participated in the study.

An expression of thanks is extended to Miss Nancy Wood for her timely advice.

Finally, but certainly not least, my sincere gratitude is extended to my wife, Sharon, who although kept busy with her own academic pursuits, provided encouragement when I needed it.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Competitive sport is a regular occurrence in most societies. The performances evidenced in many competitions are the culminations of several hours, weeks, months and, possibly, years of training. Athletes spend a certain amount of time training for and competing in their respective sports or events. When consideration is given to the amount of time spent in the training environment, it may come as no surprise that an appreciable amount of the total time that an athlete dedicates to his or her sport, or event, is spent in training.

Usher (1975) stated, for example, that three young Edmonton figure skaters each respectively spent 40, 65, and 75 hours per week on the ice (Edmonton Journal, January 24, 1975). Although that amount of training time causes speculation, it is not unusual for some university athletes, of middle distance events, to run 50 miles or more a week in training. Usually such training begins several weeks before, and may continue through, the competitive season. Similar time components and commitment training involvements are experienced by other university track and field athletes.

The training environment, for the athlete, can be influential in many ways. What transpires in the training environment can be effectively progressive or non-progressive for the athlete.

Contests are not won on the day of competition; they are prepared for by hours and days of strenuous and intensive practice. Thus, the quality of these practices, not necessarily their duration or even their intensity, plays an overriding part in winning efforts

There are several threads or guidelines which run through practice sessions, that contribute in various ways to the attendant psychological and social "climate". Well conducted practices are based on sound teaching and learning principles. These guidelines arise from the psychological literature in motor learning, transfer of training, and retention of skill. Practice sessions also afford the coach many opportunities to either motivate or "turn off" or to prepare or confuse the athletes with whom he is dealing (Cratty, 1973, pp. 44-45).

Much relevant literature has been written pertaining to performance in competitive sports. Track and field athletics certainly enjoys such literary contributions. However, Alderman (1977), Desharnais (1975) and Doherty (1976, p. 6) state that much of the literature covers the important physiological and biomechanical dimensions. Other factors, including the psychological dimension, did not receive much attention. For a long time, this specific factor was treated with intuition and chance in athletic events, but this situation is changing slowly (Desharnais, 1975).

Lersten (1971), as pointed out by Alderman (1977), claims that training decisions should be made on the bases of two criteria:

1. the precise performance intended, and
2. the particular individual.

Usually, Lersten (1971) continues, programs are applied to everyone, regardless of their:

1. physical condition,
2. individual rate of improvement,
3. psychological "orientation",
4. likes and dislikes.

Additionally, Cratty (1970; 1973, p. 45) and Morgan (1974) recommend the need to individualize training programs. They also

indicate that it is desirable to involve the athlete in the designing of his or her training program. This author, in developing this concept further, contends that it is not only desirable to cater to the individual track and field athlete's physiological abilities, and apply sound biomechanical techniques but, speculatively, it is also desirable to deliver the athlete to, or be at least sensitive to, those situations that will enhance his or her training efforts.

In his "theoretical performance model", Desharnais (1975) identifies three major aspects. They are:

1. task analysis,
2. athlete's selection,
3. athlete's training.

It is the third aspect - athlete's training - that is of particular interest to this study. Falling into the category of the "athlete's training" are the learning and environmental conditions (Desharnais, 1975). With reference to the environmental conditions, Desharnais had this to say:

In addition to the efficiency of learning, some environmental conditions may also influence success of a training period. These conditions are particularly concerned with organizational and managerial aspects in relation to the athlete's satisfaction level.

Satisfaction related to performance is . . . among major interests in organizational psychology (Schein, 1964; Smith, 1964) and managerial psychology (Leavitt, 1964; Haire, 1964). According to Locke (1970) a drop out in performance may happen when an individual is unsatisfied with some working conditions, even if a task is attractive in itself. This statement is corroborated by Pritchard (1973). He states that persons satisfied with environmental conditions have generally a tendency to maintain a high level of performance. These conditions are particularly related to the efficiency of organization, quality of management, opportunity for recog-

nitition, status, sense of responsibility from the job, and so on.

These environmental conditions appear very important being considered in sport and particularly in training programs. As a matter of fact, we may assume that a high level of unsatisfaction with some environmental conditions could produce detrimental effects on learning and performance.

Therefore, it would seem that the integration of certain preferred situational components can enhance the training efforts of the athlete. In other words, individual training programs should consider those training preferences of the athlete that are agreeably productive to his or her training efforts. The preferred training situation may depend, to a large extent, on the perception and, possibly, the athletic experience of the athlete to the particular activity that he or she has to perform.

It is quite conceivable, for example, that the same activity for athletes, in the same event, may in fact be perceived quite differently by any of those same athletes. Although a group of athletes may be performing the same training activity, the situational preference may differ from one athlete to another. An athlete may prefer to perform that aspect of training in a different situation - for example, by himself or with only certain athletes. If the situation does not fully lend itself to the preference of the athlete, it possibly detracts from the athlete's training efforts.

Conjecturally, any number of situations for an athlete is possible during the course of a training session, week, cycle or phase. On that basis, and depending on the nature of the physical aspect of training, the following interactions and/or other interactions may produce desirable training performances that are instrumental to

achieving sessional and long term goals.

1. In some situations it is possible that only the interaction of the athlete and the activity are necessary for desirable training effort.
2. In other situations, it is possible that only the interactions of the athlete, the activity and coach are important.
3. In still other situations, it is possible that the interactions of the athlete, activity, other athletes and the coach are important.
4. In some situations, it is possible that the interactions of the athlete, activity and other athletes are necessary.

In psychological hedonism, a person chooses those courses of action which are pleasurable to him. This is a principle fundamental to physical activity and sport (Alderman, 1974, p. 196). People are choosing only those activities that are attractive to them in some manner and disregarding those that are unattractive. If one chooses to side with this stance, then it seems a natural consequence that an athlete, consciously or subconsciously, will show additional preferences, even at the sub-skill level, for training situations that relate to the athlete's particular sport or event. That does not necessarily mean that those preferences will, or will not, be beneficial to the athlete's endeavours. It does require that the athlete's preferences should be respected with communicative examination and consideration between the coach and athlete.

The Problem

If we adopt the theory that training situations are on a continuum, then situations in the training environment are somewhere

between the least and the most productive. When desirable training performances occur, they largely result from the combination of favourable variables and, as such, the training situation, experienced by the athlete, gravitates to the most productive end of the continuum.

Carron and Chelladurai (1978) make references to the works of three authors. They are Cratty, Singer and Alderman. Cratty (1967) proposed that the physiological, psychological, social and body structure are the four variables that have a direct influence upon the individual's performance. In Singer's (1972) model, it is assumed that genetics, childhood experiences, personal goals, environmental influences and other interactions (including coach-team-athlete compatibility) contribute in a sequential manner to the development of performance excellence. In their third reference, Alderman (1974) proposed four classes of variables which underlie skilled performance. These include fitness, skill, physical endowment and psychological dimensions. From the previous research, Carron and Chelladurai (1978) identified four inter-dependent classes of variables which are related to athletic competitive performance. They are, under broad classifications:

1. team,
2. athlete,
3. coach,
4. spectator.

In the training environment, however, the spectator seldom "participates" in or has an effect on the training performance of the athlete. As such, the variables most obvious and which probably influence training efforts are the athlete, other athletes, coach and the physical aspects of training, and the way any of these variables interact to make

different training situations.

In discussing the question of coach-athlete interpersonal behaviour, Carron and Chelladurai (1978) stated that:

. . . it is not reasonable to suggest that the psychological area represents the sole consideration underlying performance effectiveness. In turn, it is also not reasonable to suggest that within the psychological area, the issue of coach-athlete interpersonal behaviour represents the single important consideration.

Cratty (1973, pp. 8-9) supportive to this stance stated that:

Knowledge about the psychology of sport and athletes, and about the social dimensions of physical activity is no substitute for a sound grounding in the fundamentals of the sport, of knowledge about strategies called for, and of conditioning methods. The practice of sound psychological and sociological principles in coaching provides a helpful adjunct to what other background the coach may bring with him to the training situation.

What has been reported by Carron and Chelladurai (1978) has focused on athletic performance. Additionally, how well one performs in formal competitions relates back, to a large extent, to what has transpired in the training environment. Lending some support to this, is the work by Ryder, Carr and Herget (1976). They, as stated by Carron and Chelladurai (1978), analysed the factors which could potentially affect future performance in world class track events. The following is stated about their findings:

On the basis of their analysis of the performances of runners who held world records over the past 50 years and the physiological parameters that affect sprint and endurance events, they concluded that the limits to future performance were psychological in nature, not physiological. Moreover, they also pointed out that the critical psychological considerations were those affecting daily training, not those evidenced in the actual event itself.

Although this study will not involve world class athletes, one aspect is fundamental to all track and field athletes. That is, behaviour. Lewin (1935) said behaviour is product of the person and the environment.

$$B = f(P, E)$$

Other writers have supported this behavioural stance. Specifically to the area of sport, interactions of the behaviours of the coach and athlete, and of the athlete and athlete, constitute an important dimension of the total situation - a dimension which will often tip the scales from failure to success or vice versa (Cratty, 1973, p. 44). Also, training efforts can be, largely, a function of the athlete and the situation he or she experiences in training. Implicit to this is that the athlete's interpersonal behaviour is a product of three sets of forces (Carron and Chelladurai, 1978):

1. situation or environmental factors;
2. others' personalities, preferences, need dispositions, etc.;
3. and the athlete's personality, preferences, need dispositions.

Lersten (1971) states that in designing a training program, among other things, there should be regard for the athlete's likes and dislikes. Cratty (1973, p. 53) indicates that the coach who works with individual-sport athletes should accommodate individual differences and preferences. Carron and Chelladurai (1978) mention the importance of considering and catering to the preferences of the athlete.

The suggestions and recommendations made by the three authors in the preceding paragraph have a common sense approach and concern; but, as such, lack the support of research findings. In each case, there is identification of neither the type of preference - that is,

situational or physical skill related - nor the sports in which strong preferences are likely to occur. With specific concern to track and field athletics, research to identify the strengths and occurrences of preferences for certain situations in the training environment is non-existent.

While subjectively observing track and field athletes practice, there are various situations that exist during the course of a session. On the basis of the aforementioned discussion, the purposes of this study, from a track and field athlete's perspective, are to:

1. obtain measures of the strengths of preferences for certain situations in the training environment;
2. obtain measures of the consistencies between preferences and actual occurrences for certain situations in the training environment. It must be noted that "actual occurrence" is a term used for the purpose of this study. The "actual occurrence" scores reflect what athletes perceive as occurring for the different situations on the variables examined in the study.

To explore the above-stated purposes of this study, the following hypotheses, for the two, male and female, experimental groups, will be tested:

- (a) That no significant relationship exists between:
 - (i) the amount of attention and feedback preferred by the athletes, from the coach, and the actual amount of attention and feedback provided, by the coach, in specific and non-specific forms of training;
 - (ii) athletes' preferences to train with, or without,

other athletes when performing specific and non-specific forms of training and actual occurrences of training with, or without, other athletes in the same forms of training;

- (iii) athlete's preferences to be involved with the coach, in the designing of their training programs and the extent to which they are actually involved, with the coach, in the designing of their training programs.

Definition of Terms

Preference--to choose, esteem or like above another situation.

Athlete--any person who has registered to compete for the University of Alberta track and field team for the 1978-79 indoor season, and who is coached by a University of Alberta or club track and field coach.

Attention--observation of training with a view to offering advice.

(Positive) Feedback--information from the coach that is helpful to the athlete's training efforts (i.e., information and advice to help the athlete maintain a desired level of performance or, if necessary, advice to help improve training performance.

Training Environment--includes the athlete, the physical aspects of training, other athletes and the coach.

N. B. The athlete and any of the other variables can interact to form a training or training related situation.

Specific Training--training that is highly related to the athlete's event (e.g., sprinting and spring starts, etc., for sprinters;

approach work, jumping and bounding, etc., can be considered as specific forms of training for jumpers; etc.)

Non-Specific Training--(or general training) has its value in training but is not highly related to the athlete's event (e.g., aerobic running for sprinters, jumpers and throwers can be considered as a form of non-specific training; etc.).

Importance of the Study

Athletes participate in sports for different reasons (Coutts, 1968; Usher, 1975, p. 13). To discuss those important reasons is not the purpose of this study. However, it is important that we go beyond general assumptions and speculation on some of the variables that operate in the training environments.

The training environment, theoretically, provides the foundation to performing successfully in formal competitions. As such, efforts must be made to identify the situations that are highly positive to the athlete's training performances. In order for the coach to enhance his own presence and purpose, and enrich the athlete's participation, it is important that the coach be, at least, aware of and sensitive to the kinds of situations that are strongly preferred by and which enhance the training efforts of "his" or "her" athlete.

This pilot study investigated some of the situations that operate in the training environment. Within the limitations of this study, it was hoped to substantiate or dismiss assumptions generalized to the level of track and field athletes involved in this study.

Delimitations

- A. The sampling of subjects will be limited to the University of Alberta track and field athletes.
- B. The sampling of subjects will be limited to those male and female athletes on the University of Alberta track and field team.
- C. The study is limited to examine the following factors:
 - 1. To establish the extent to which preferences exist and are met with University of Alberta track and field athletes in the training environment in the following areas:
 - (i) amount of attention and feedback from the coach in specific and non-specific types of training;
 - (ii) training with other athletes when performing specific and non-specific types of training;
 - (iii) participation of the athlete in the designing of the training program.

Limitations

The study is limited by:

- 1. the number of athletes who volunteered to participate in the study;
- 2. the reliability and validity of the questionnaire used in the study;
- 3. the number of factors contained in the questionnaire.

CHAPTER II

REVIEW OF THE LITERATURE

FEEDBACK

Introduction

Whereas many authors use the terms feedback, reward, reinforcement and knowledge of results interchangeably (Dickinson, 1977, pp. 8-9; Robb, 1966), the importance of feedback to performance has been well recognized (Robb, 1966). Robb (1966) informs us that the literature reviewed in this area revealed three main effects of feedback on human performance. That is, feedback has been thought of as motivating (Amode, 1958), regulating and/or reinforcing (Adams, 1964).

In the area of psychology, there are various techniques that can be used to effect behaviors. Among such techniques is positive reinforcement. Positive reinforcement increases the probability of a preceding behavior (Dickinson, 1977, pp. 8-9; Martin and Pear, 1978, pp. 18-19). The principle of positive reinforcement has two parts (Martin and Pear, 1978, pp. 18-19):

1. if in a given situation somebody does something that is followed immediately by a certain consequence, then,
2. that person is more likely to do the same thing again when he next encounters a similar situation.

Such a consequence is called a positive reinforcer, a term that is roughly synonymous with the word reward (Dickinson, 1977, p. 9; Martin and Pear, 1978, p. 19). Some stimuli are positive reinforcers for virtually everyone (Alderman, 1974, p. 36; Martin and Pear, 1978, p. 21).

However, in certain situations, some individuals are "turned on" by different things (Cratty, 1973, p. 52; Martin and Pear, 1978, p. 22; Siedentop and Rushall, 1972). Unfortunately positive reinforcement can also be used to strengthen an undesirable behavior, or an element that is inappropriate to a motor skill (Dickinson, 1977, p. 79; Martin and Pear, 1978, p. 22). For example, if an individual performs a response which in total receives positive reinforcement, or positive augmented feedback, all of that response will be strengthened. If one element is inappropriate or not optimum it will be strengthened also and be difficult to eradicate. Therefore the behavior to be reinforced or provided with positive augmented feedback, should be specific rather than a general category (Dickinson, 1977, p. 79, Martin and Pear, 1978, p. 20).

When attempting to strengthen a social behavior it is desirable to provide reinforcement immediately following the desired behavior (Martin and Pear, 1978, p. 20). If there is a delay in providing reinforcement, the wrong social behavior could be reinforced, or effect lost when reinforcement is given. However, with regard to motor skills, providing immediate augmented feedback or reinforcement may not be desirable. For some motor skills augmented feedback can be concurrent and meaningful (Robb, 1966). In other motor skills there should be a temporal delay in providing augmented feedback (Gentile, 1972; Dickinson, 1977, p. 81-82). It is thought that the coach's comments should be delayed for a brief interval of time so that the athlete can process and encode the information he obtained after the movement. At the moment the term "brief" appears to be subject to individual interpretation.

Extinction, punishment and shaping are, also, psychological techniques that are used to strengthen, eliminate or introduce new

behaviors. If such techniques are used unwisely, they, or any one of them, can produce an anastomosis of undesirable behaviors.

Once a skill/behavior has been strengthened, a schedule with only intermittent reinforcement is needed to maintain the behavior (Alderman, 1974, p. 89; Martin and Pear, 1978, p. 74). Alderman (1974, p. 89) states that:

... continuous reinforcement enhances the learning of a particular skill or behavior, but once the skill or behavior is learned, people work with greater intensity and for longer periods of time when reinforcement is introduced intermittently than when it is continuous.

However, the term "intermittent" is also, possibly, subject to individual interpretation.

Jokl (1966), surprisingly, makes no mention of the importance of feedback on performance. In his theory, Jokl (1966) identifies four stages to voluntary activity. First, is the 'idea of the work' to be performed. Second, is the 'design of the work' imagined at the moment when activity begins. Third, is a 'constructive plan' that encompasses the sequential steps to complete the task. Fourth, is the motor technique employed for the attainment of the objective. In support of the stages Jokl stated that:

Construction plans for all human pursuits that aspire at the attainment of excellence of motor performance demand that the pupil spends a great amount of time practicing ... Intensive sustained training is an indispensable prerequisite for athletic, as well as artistic, success. Without it the full potentialities of neuromotor skill cannot unfold themselves.

In short Jokl's (1966) theory is that:

... thinking and watching do not suffice for the acquisition of skill. It is through sustained practice alone that coordinative potentialities

are developed and new cognitive qualities conveyed.

Dickson (1977, p. 87) in adding another aspect to practice, has this to say:

Practice does not, of course, make perfect, but it is a prerequisite of perfection. In order to achieve the highest levels of skilled performance there are frequently lengthy periods of acquisition. The time spent on the sport may be correlated with a level of performance but it is only a low level of correlation. Even if individual differences were to be held constant the length of practice would be unlikely to assume importance on its own. What is far more significant is the quality of the reinforcing contingencies available during practice for the components of the skill. Simply devoting time to the skill without differential reinforcement for appropriate versus inappropriate actions is likely to result in only minimal changes in the level of skill. These differential reinforcements may be effectively provided by the coach, but this is not altogether essential.

Furthermore, it is possible for an athlete to practice self-analysis and self-instruction. However, such self-involving practices require that the athlete be well acquainted with his or her particular sport or event (Dickinson, 1977, p. 87). A point of disagreement is that although the athlete is well acquainted with his or her sport, or event, it is possible for a discrepancy to exist between what the athlete does, and what the athlete thinks he is doing for the same movement in a practice situation. Self-analysis is extremely difficult and is often inaccurate (Robb, 1970). Therefore, augmented feedback from the coach, during practice is important. Supportive to this Cratty (1973, p. 50) states that the progress of an athlete will depend upon how often during practice someone pays attention to him, and how often he receives information concerning his performance and progress.

Fitts' Theory

Robb (1970), referring to the work by Fitts (1962), a psychologist in the area of human performance, identifies three stages to skill learning. They are:

1. the cognitive phase
2. the fixation phase
3. the automatic phase

Fitts' (1962) theory was formulated from information obtained in interviews with physical education teachers and coaches.

The cognitive phase consists of the understanding of what the task requires. That is, understanding the objective or purpose sought and the sequence of the components of the movement. To introduce the correct mental "set", or idea, a coach may resort to a different stimulus (auditory, visual or actual performance) to teach a skill. Using all methods simultaneously potentiates the danger of "overloading the system". The cognitive phase can sometimes be completed in a few minutes or a few hours.

The second stage - the fixation stage - is the longest of the three phases. It requires a great deal of time, energy and effort - much practice - to "fix" the performance sequence in the human system. Although the amount of practice needed can vary from one person to another, augmented feedback is important.

It is during the fixation stage that the temporal patterning or timing as well as the spatial relationship of the components of the task must be mastered. The timing and delicate control needed to bring in each component of the task at the appropriate time may be extremely difficult ...

Meaningful practice with appropriate feedback is necessary during the fixation stage. Practice

alone is not the answer, but practice with feedback is necessary ...

The importance of feedback cannot be over-emphasized. In the fixation stage feedback plays a very important role. (Robb, 1970)

The automatic stage is characterized by an increase in the ease of accomplishing a task or skill, and a decrease in the stress and anxiety of the athlete. The athlete has achieved the sequence of the movement through meaningful practice, has reduced his range of errors, and performs the total movement automatically with consistent results. It is during the automatic stage when the sequence can be thought of as having been "delegated to a lower centre". This then frees the central processing system to deal with other problem areas of the skill.

Robb (1970) continues that the average sports participant rarely reaches the automatic stage until he or she has practiced conscientiously for several years. Additionally, none of the three phases are completely independent of one another. It is, sometimes, necessary to return periodically to the cognitive phase during other learning stages.

The striking and important aspect of Fitts' (1962) model is that augmented feedback is important in all three phases of skill acquisition.

Gentile's Theory

Gentile (1972) stated that the coach can provide augmented feedback of two types:

1. information concerning the movement's execution (knowledge of performance), or
2. information about the degree of goal-attainment (knowledge of results).

If augmented feedback seems warranted, the most appropriate type of information that the coach could provide for closed skills (such as track and field athletics) seems to be knowledge of performance (Gentile, 1972). Providing additional information about how the movement was performed could take several forms, such as verbal description, demonstration, instant replay video tape, or polaroid graph-check sequences (Del Rey, 1970; Hampton, 1970). Although it is not clear just how long after the performance one should wait before administering feedback (Gentile, 1972), Gentile (1972) and Dickinson (1977, p. 80) gravitate to the theory that information should not be given immediately after the response. That will avoid interference with the consolidation of intrinsic feedback (Gentile, 1972). With added speculation, Gentile's (1972) view is that augmented feedback could be most beneficial if it is provided just prior to the next response while the athlete formulates his next motor plan.

In accord with Fitts' (1962) model and Robb's (1970) writings, but offering specific support to the types of feedback that should be given to athletes involved in open or closed skill events, is the work by Del Rey (1972). Del Rey (1972) states that during the fixation stage of acquisition for closed skills, the athlete attempts either,

1. to reduce the variability in his own movement (such as a track and field event), or,
2. to bring the pattern into conformity with an externally imposed standard style (such as diving and gymnastics).

Referring to Gentile's (1972) model, Del Rey (1972) stated:

For both open and closed skills the (coach) can provide the student with information regarding either his movement or his goal-attainment.

Information feedback (IF) about the movement itself has been referred to as knowledge of performance (KP). Any IF concerning environmental consequences of the movement has been referred to as knowledge of results (KR) ...

Any IF the (coach) provides for the (athlete) with the intent of altering a subsequent attempt can be referred to as augmented IF ...

Gentile (1972) has suggested that the most appropriate kind of augmented IF for closed skills is information about the movement itself (KP).

Verification of Gentile's Model

Empirical verification of Gentile's (1972) model has taken several forms (Del Rey, 1972). Among them are the works by Hampton (1970) and Del Rey (1970) as summarized by Del Rey (1972). Hampton (1970) investigated the relationships between KP and KR with the closed skill of shot-putting. Hampton employed four experimental groups with combinations of the two levels of both feedback conditions. Following Gentile's model, Hampton hypothesized that augmented KP in the presence of intrinsic KR would be most effective for increasing the distance the shot was put. This hypothesis was supported ($p < .05$) providing empirical evidence for the thesis that the most effective IF for closed skills is augmented KP.

In Del Rey's (1970) study, the skill performed was a modification of the classical fencing lunge. In a closed environment the subject lunged toward one stationary target. In the open environment the subject had to choose between two targets. The results of the study supported the Gentile model and were in accord with the results obtained by Hampton (1970). Augmented KP produced better form and higher accuracy scores in the closed environment than in the open environment.

Dickinson (1977, pp. 81-82) summarized an experiment by Annett (1959). The subjects had to learn to produce a particular pressure on a plunger. Some of the subjects received detailed information while they pressed the plunger, whereas others received information only after they had completed the trial. The group which received concurrent feedback learned to apply the correct pressure more quickly. However, at a later stage in the experiment, when no information concerning the response was given to either group, there was a significant superiority for the group which had not received the information whilst in the process of applying pressure. This evidence tends to support the view that delay of augmented feedback does not necessarily retard the acquisition of a particular skill.

Annett's (1959) "early" study provides basically, additional support to the "later" hypothesis of Gentile (1972). Augmented KP is effective in the following ways:

1. important and necessary to performance;
2. helps to improve performance;
3. enhances retention when augmented feedback is provided over a "long enough" period;
4. beneficial to closed skills.

Summary

In summarizing, augmented KP is a productive form of feedback for closed skills (Del Rey, 1970; Gentile, 1972; Hampton, 1970). There is no denying the importance of augmented feedback on closed skills. Although immediate augmented feedback is required to shape and/or strengthen and maintain socially oriented behaviors (Martin and Pear,

1978), immediate augmented feedback may not necessarily be the most beneficial to shape and/or strengthen and maintain motor skills (Annett, 1959; Dickinson, 1977; Gentile, 1972). It is believed, in some quarters, that a brief temporal delay in providing augmented feedback will allow the athlete's system to maximally utilize the information that is provided, and thereby, avoid interference with the consolidation of intrinsic feedback (Gentile, 1972).

The most important aspect is that meaningful practice with the proper augmented feedback produce desirable effects on the athlete's (training) performance (Annett, 1959; Cratty, 1973; Del Rey, 1970; Dickinson, 1977; Gentile, 1972; Hampton, 1970). However, for augmented feedback to be most effective, a specific aspect, or part, of a skill must be reinforced. Providing positive augmented feedback to a category of skills, or movements, will strengthen not only the desirable part of the skill, but also, any inappropriate or undesirable part of the skill (Dickinson, 1977; Martin and Pear, 1978).

Continuous reinforcement enhances the learning of a particular skill, or behavior (Alderman, 1974; Martin and Pear, 1978). Once the skill, or behavior, is learned intermittent reinforcement is required to maintain or increase the level of the skill. The term "intermittent" warrants caution. It has been pointed out that there is no single optimum schedule for all skills, and each task must be analysed in relationship to the athlete's abilities, capabilities and desires (Robb, 1970).

"Across a wide range of animal and human behaviors, it has been demonstrated that effects do cause behavior to develop and change. Effects can be arranged so as to maximize the rate of acquisition of

specific behaviors and then to maintain the desired rate of occurrence in a number of contents" (Siedentop and Rushall, 1972).

IMPROVING THE ATHLETE'S TRAINING EFFORTS

Introduction

Most of the information pertaining to production in terms of improving performance, and productive relationship between coach and athlete, in track and field, have been extrapolated from research findings in the areas of managerial and organizational psychology. Stated differently, findings from business psychology research have had an impact on sport management (Doherty, 1976, p. 7). Furthermore, added Doherty:

At first glance, coaching in educational institutions and management in private-profit business seem to have little in common as to either goals or methods. But ... (there are) important similarities, especially if we equate production with sport performance and profit with winning.

In brief, the various theories of management fall into four classes (Doherty, 1976, p. 7), commonly called:

1. Theory X
2. and Theory Y as developed by McGregor (1960);
3. Likert's (1961) principle of supportive relationship;
4. Johnson's (1967) General System Theory

1. Theory X

Management under Theory X is described by McGregor as traditional, production-centered and authoritarian. Such an authoritarian

management uses various means to enhance business production, but offers little, at most, to meet the workers' needs. As "... long as the assumptions of Theory X continue to influence managerial strategy, (management) will fail to discover, let alone utilize, the potentialities of the average human being."

2. Theory Y

Theory Y involves the integration of individual and organizational goals. Its emphasis is on the human side of business.

McGregor (1960), as stated by Doherty (1976, p. 9), analysed one hundred and eleven studies of the nature of leadership. McGregor concluded that leadership is not only a special quality as had been widely held, but also a complex of relationships among the leader-followers-institution-social milieu, all of which are unique in any given situation, and vary from one generation or culture to another. When such relationships are in opposition, as is usually the case under authoritarian leadership, interest and energy wane, or may even become destructive. Methods of leadership that are mutually supportive of the enterprise and its workers produce gains in cooperation, effort and effectiveness in work output.

3. Management as Mutually Supportive Relationship

In his award-winning book of research on the problems of business management, Likert (1961), on the basis of Doherty's (1976, p. 9) writing, confirmed the work of McGregor (1960). Likert concluded that workers at all levels of the business enterprise, top to bottom, are more productive and tend to increase profits when they feel the enterprise is centered in and organized under mutually supportive relationships.

4. Creative Management

The theories of McGregor and Likert are strongly supported by the success experienced by Shigaru Kobayashi (Doherty, 1976, p. 9). Kobayashi (1971), personnel manager of Japan's SONY corporation, writes that SONY plants have no timeclocks to be punched or absentee reports controlled by management. If production falls off in a department, small "cells" of workers check on themselves for possible causes. Such viewpoints and methods seem amazing, feasible only where a climate of mutual trust and mutual respect between management and workers prevails (Doherty, 1976).

Other studies have also found that when management involves employees in the planning of work, identification and solution of problems, it pays dividends to the workers and the company (Paul et al, 1969; Roche and MacKinnon, 1970).

In 1961, Robert R. Blake and Jane S. Mouton established scientific methods, incorporated as a means of improving business management methods and relationships. In 1975 over 75 of the top 100 industrial companies of the United States, as judged by 'Fortune' were clients (Doherty, 1976, p. 10). During the interim, Blake and Mouton (1964) produced 'The Managerial Grid'.

In 'The Managerial Grid', Blake and Mouton assign numerical values to various degrees of concern for:

1. methods that are work-oriented (i.e. concern for production methods and profit);
2. methods that are people-oriented.

A checkboard grid was constructed, 9 x 9 squares in size, with "concern for people" rated on the vertical scale, and "concern for production" on

Figure 2.1. The Vital Balance (line A-D) between expertise in technology and in working with numerous and varied persons. Horizontal lines show increasing concern for technology (training methods, techniques and the related sciences); vertical lines, increasing concern for persons.

Effective coaching seeks a balance between the two, as in the squares 4-3, 4-5, 7-6, 6-7 that lie along the A-D balance line. Only as we approach the fully effective coach (9-9) is there integration of both at highest levels (Doherty, 1976, p. 33).

the horizontal. Low concern was given a value of 1, high concern, 9.

The authors identified five basic styles of managerial leadership:

- 9,1 The highly authoritarian manager with expertise and high concern for methods of production but little or no concern for people as persons.
- 1,9 The manager primarily concerned with getting along with people, though with little understanding or interest in their high level capacities, and little concern for the problems of production.
- 5,5 The "compromiser" who balances moderate concern for production with moderate concern for human relations.
- 1,1 The manager who gets by with minimum effort and concern.

From this business managerial grid extrapolations have been made to the relationships of track and field coaches and athletes.

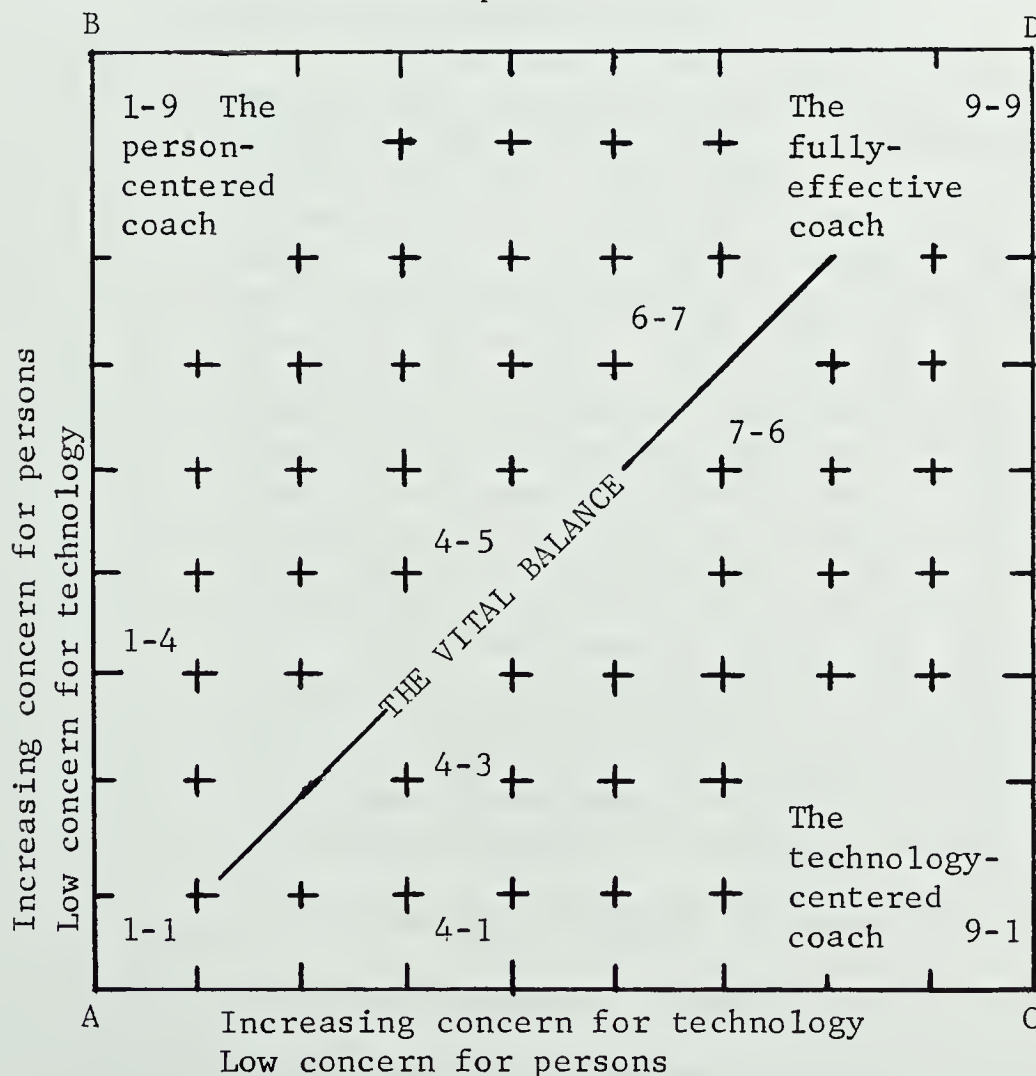


Figure 2.1

EFFECTIVE COACHING
GRID

As such, it is "... a first effort toward a more analytic study of the human side of coaching" (Doherty, 1976, p. 33).

In his "theoretical performance model", Desharnais (1975) identifies three major aspects. They are:

1. task analysis
2. athlete's selection
3. athlete's training

Falling into the category of the athlete's training are the learning and environmental conditions (Desharnais, 1975). With reference to the environmental conditions, Desharnais (1975) had this to say:

In addition to the efficiency of learning, some environmental conditions may also influence success of a training period. These conditions are particularly concerned with organizational and managerial aspects in relation to the athlete's satisfaction level.

Satisfaction related to performance is ... among major interests in organizational psychology (Schein, 1964; Smith, 1964) and managerial psychology (Leavitt, 1964; Haire, 1964). According to Locke (1970) a drop out in performance may happen when an individual is unsatisfied with some working conditions, even if the task is attractive in itself. This statement is corroborated by Pritchard (1973). He states that persons satisfied with environmental conditions have generally a tendency to maintain a high level of performance. These conditions are particularly related to the efficiency of organization, quality of management, opportunity for recognition, status, sense of responsibility from the job, and so on.

These environmental conditions appear very important being considered in sport and particularly in training programs. As a matter of fact, we may assume that a high level of unsatisfaction with some environmental conditions could produce detrimental effects on learning and performance.

"If business enterprise has found that the use of science as related to the many aspects of production and work methods results in greater profits, can we not assume a similar result in terms of per-

formance and winning ...

If business enterprise has found that use of related sciences in furthering its relationships with people is even more beneficial for production-profit than is the use of related sciences as applied to production alone, cannot we again assume a similar benefit for track and field? If so, we must change our emphasis in the training of our coaches and in the writing of our coaching textbooks. In the past, both our textbook writing and our coaching classwork (lectures, films, field practice) have been almost entirely in terms of methods and techniques of performance. But this new emphasis demands that a considerable portion of our time and concern be given to what we have called the human side of our sports enterprise, to our relationships with all the many groups and institutions encompassed within General Systems Theory" (Doherty, 1976, p. 12).

"... I do not suggest that the methods and technology of track and field events are likely to be less important in future progress ... But up to the nineteen seventies we have almost entirely neglected the human centered sciences ... (even though) it's true that directly useable research has fallen far short of our needs" (Doherty, 1976, p. 13).

Coaching Leadership Types

Doherty (1976, pp. 13-24) identifies a number of 'Coaching Leadership' types. They include:

1. Coaching Leadership as Charisma
 - (i) Charisma as Enthusiasm
 - (ii) Charisma as an Outgrowth of Hard Work
2. Coaching Leadership as Traits

(i) Leadership Traits as Tendencies

3. Coaching Leadership as Relationships

(i) Roles of the Coach

(ii) Over-Evaluation

(iii) The Coach as Toiler

(iv) The Coach as Instructor

(v) The Coach as Planner

(vi) The Coach as Executor

(vii) The Coach as Recruiter

(viii) The Coach as Salesman

(ix) The Coach as Father Figure

(x) The Coach as Reliever of Athlete Responsibility

With particular reference to 'Coaching Leadership as Relationships' it was pointed out that "... a coach can be effective as a leader of others only as his relationships are effective, or as ... his relationships are mutually supportive. A coach may have great leadership charisma, exhibit all the traits of great coaching, and know the most scientific methods and techniques of track and field, but these have no meaning except in relation to other people" (Doherty, 1976, p. 18).

'The Coach as Reliever of Athlete Responsibility' "... plays a very important role in relieving the athlete of the burden of responsibility for planning and making decisions that quite often he is neither ready nor willing to make. This is obviously true for beginning athletes, but also for those of long experience at high-performance levels ...

Unfortunately, what began as mere helpful relief has gradually become self-righteous power. The coach and sports administrators generally now tend to take such power of decision for granted, quite apart

from its uses for the athlete" (Doherty, 1976, pp. 24-25).

When athletes, particularly from a team sport, are involved in compiling and establishing goals and intentions, including certain modes of behavior, it increases commitment and dedication once the "targets" have been decided (Botterill, Coaching Association of Canada, Bulletin 15). That type of involvement by the athletes produces a form of 'psychological contracting' which can be extremely helpful in leadership (Kanfer, 1974).

It is only in recent years that there have been serious scientific efforts to discover the ways in which individuals vary from each other (Doherty, 1976, p. 31). Individuals are different:

1. both structurally and functionally (Williams, 1956; 1976);
2. in nutritional needs (Williams, 1956, p. 162);
3. in their reasons for participating in sports (Coutts, 1968; Usher, 1975, p. 13).

The third category may have its roots in psychological hedonism or vice versa. In psychological hedonism people choose only those activities that are attractive to them in some manner and disregard those that are unattractive (Alderman, 1974, p. 196). Further to this, it seems a natural consequence that an athlete, consciously or subconsciously, will show additional preferences, even at the sub-skill level, for training situations that will enhance his own causes to the athlete's particular sport or event.

Theories of Concern For The Athlete

Lersten (1971) states, as pointed out by Alderman (1977), that there should be regard for the athlete's likes and dislikes when

designing a training program. Cratty (1973, p. 53) indicates that the coach who works with individual-sport athletes should accommodate individual preferences and differences. Carron and Chelladurai (1978) mention the importance of considering and catering to the preferences of the athlete. Cratty (1970; 1973, p. 45) and Morgan (1974) recommend the need to individualize training programs, and they indicate that it is desirable to involve the athlete in the designing of his or her training program. Where preferences, likes, and dislikes are mentioned, there is failure to identify the kind(s) or type(s) of preference(s), like(s) and/or dislike(s) that should be considered.

The coach-athlete relationship is important. In discussing the question of coach-athlete interpersonal behavior Carron and Chelladurai (1978) point out:

The individual has a need to both express affection and receive it from others; and to express and receive control and inclusion behavior. In order to achieve compatibility in an interpersonal relationship, an equilibrium between the coach and athlete cannot be determined solely on the basis of the coach's personality/behavior. Rather, it is necessary to determine whether the behavior expressed by the coach (or athlete) is compatible with that wanted by the athlete (or coach). For example, an authoritarian coach should be compatible with an athlete who wants to be controlled, yet incompatible with an athlete who wishes to exert control. Similarly an athlete with a high need for affection should be incompatible with the coach who expresses very little affection in an interpersonal situation.

Of additional importance Carron and Challadurai (1978) stated:

... it is not reasonable to suggest that the psychological area represents the sole consideration underlying performance effectiveness. In turn, it is also not reasonable to suggest that within the psychological area, the issue of coach-athlete interpersonal behavior represents the single important consideration.

Summary

On an observational basis, the variables most obvious and which probably influence training efforts are the athlete, other athletes, coach and the physical aspects of training, and the way any of those variables interact to make different training situations. Furthermore, during the course of, for example, one training session for track and field athletes, several situations are obvious. As an extension to psychological hedonism, it stands by way of reasoning that a number of situations that one observes in a training session may, also, have preferential underpinnings.

In a business situation, although a worker may be involved with management in decision making, helping to solve problems et cetera, it is highly unlikely that the worker, during the course of a day, will be able, or allowed, to move from one work situation to another as he chooses. Whereas, in an amateur sport training session, an athlete moving from one situation to another, during the course of one session, is not an uncommon occurrence. Or, at least, the opportunity to choose situations appears more obvious in a sport training environment than in a business work environment.

CHAPTER III

METHODS AND PROCEDURES

The Subjects

The subjects were University of Alberta track and field athletes. One female and one male experimental group was involved in the study. Forty subjects volunteered to complete the questionnaire. Thirty-seven subjects returned the questionnaires. One of the thirty-seven returns did not satisfy the requirements of the questionnaire and, consequently, was not considered in the results.

The Questionnaire

A Likert type questionnaire was used to collect the data for the study. The statements of "preference" and "actual occurrence" had an option of one answer from seven alternatives. The alternatives were:

1. ALWAYS (from 90 to 100 percent of the time).
2. OFTEN (from 65 to 90 percent of the time).
3. OCCASIONALLY (from 40 to 65 percent of the time).
4. SELDOM (from 10 to 40 percent of the time).
5. NEVER (from 0 to 10 percent of the time).
6. DO NOT KNOW
7. DOES NOT MATTER

"Always", "Often", "Occasionally", "Seldom" and "Never" received numerical values of 5, 4, 3, 2 and 1 respectively.

The purpose of the questionnaire was to obtain measures, from the athletes' perspectives, of preferences and actual occurrences on

the following variables:

1. FEEDBACK
2. COACTIVE SITUATIONS
3. PROGRAM INVOLVEMENT

Each variable consisted of six paired statements. Each pair of statements consisted of a statement of preference and a statement of actual occurrence. The following are examples of statements of preference and actual occurrence.

- (i) I prefer to train with other athlete(s) when I perform something specific to my event.
- (ii) I train with other athlete(s) when I perform something specific to my event.
- (iii) I prefer to train by myself when I perform something specific to my event.
- (iv) I train by myself when I perform something specific to my event.
- (v) I prefer to train with other athlete(s) when I perform something non-specific to my event.
- (vi) I train with other athlete(s) when I perform something non-specific to my event.

On each variable the relationship between "preferences" and "actual occurrences" was calculated. Other information, including chronological ages and experience in track and field, was collected. The statements were randomly assigned to the questionnaire.

Data Collection

During the month of February, 1979, the questionnaires were issued to all subjects. Subjects completed the questionnaire on a take-

home basis. Each subject answered the questionnaire for his or her major event for the indoor season. In addition to the questionnaire each subject was given information on the objectives of the study and definitions of the following terms:

1. (positive) feedback
2. attention
3. training environment
4. specific training
5. non-specific training

Athletes were asked not to discuss the questionnaire and their answers with other persons during the experimental period.

Data Analysis

True Agreement and Agreement Displacement coefficients, between preferences and actual occurrences, were obtained for the male and female groups on the three variables.

1. The True Agreement Coefficient is obtained by adding the number of paired responses, where preference and actual occurrence values equal each other, and then dividing by the total number of paired responses for the respective variable. (APPENDIX C, p. 83)
2. The Agreement Displacement Coefficient is obtained similarly to the True Agreement coefficient, but with a numerical discrepancy of one tolerated on both sides of the True Agreement line. (APPENDIX C, p. 83)

Values of t (Ferguson, 1976, pp. 183, 487) were used to test the significance of the coefficients, on the three variables, for both experimental groups. The differences between male and female coeffi-

cients, on all measures of each variable, were also calculated. The significance of the difference between male and female coefficients was tested by using Fisher's Zr transformation scores (Ferguson, 1976, pp. 184, 493).

The level of significance accepted for this study was $p \geq .05$.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

Two experimental groups - one male and one female - were involved in the study. Each subject was:

1. a member of the University of Alberta track and field team, and
2. coached directly by one of the university coaches or by an Edmonton, club coach.

Thirty-six subjects - twenty males and sixteen females - out of forty subjects returned completed questionnaires. The data collected included preference and actual occurrence scores for each subject on the three variables. The purpose of the study was to measure the relationship, from the athletes' perspectives, between preferences and actual occurrences on the following variables:

1. FEEDBACK
2. COACTIVE SITUATIONS
3. PROGRAM INVOLVEMENT

Two coefficients were used to assist in determining the relationship between what athletes prefer and what actually occurs on each of the three variables. The two coefficients are:

1. True Agreement coefficient, and
 2. Agreement Displacement coefficient
1. True Agreement (or T.A.) Coefficient - to obtain this coefficient
(i) add the number of paired responses where the values of preference and actual occurrence are the same, and (ii) divide by the total

number of paired responses for the respective variable.

2. Agreement Displacement (or A.D.) Coefficient - tolerate a numerical discrepancy of one on both sides of the True Agreement line. This coefficient is then obtained, in much the same way as the T.A. coefficient, by (i) adding the number of paired responses within the specific boundary, and (ii) dividing by the total number of paired responses for that variable.

Paired numerical values that are on, or immediate to, the True Agreement line assist in producing higher coefficients (APPENDIX C, p. 83)

Male Subjects

There were twenty subjects in this group. All subjects participated in dynamic or high anaerobic events (Mathews and Fox, 1976, p. 27). Fifteen of the twenty athletes participated in track events from the 50 metres sprint to the 800 metres. The other subjects competed in long and high jumps, pole vault and shot put.

Prior to the 1978-79 indoor season, the competitive levels of the subjects ranged from no competitive experience, for one subject, to international competition.

Female Subjects

There were sixteen subjects in this group. Thirteen of the sixteen subjects participated in dynamic or high anaerobic events (Mathews and Fox, 1976, p. 27). Subjects in that category participated in track events from the 50 metres sprint to the 800 metres, and field events including the long jump and shot put. The other three subjects

participated in a low anaerobic event (Mathews and Fox, 1976, p. 27) such as the 1500 metres.

Prior to the 1978-79 indoor track and field season, the competitive levels of the subjects ranged from no competitive experience, for one subject, to international competition.

Tables I, II, III, IV and V provide additional information on the male and female experimental groups.

TABLE I

AGES AND TRACK AND FIELD EXPERIENCE
OF MALE AND FEMALE ATHLETES

	Mean Age In Years	Age Range In Years	Mean Experience In T & F	Mean Experience Beyond High School
Males	20.5	18.2 - 23.0	41.9 months	18.7 months
Females	20.3	18.25 - 22.5	35.8 months	19.0 months

TABLE II

ATHLETIC YEAR OF MALE AND FEMALE
ATHLETES ON U. OF A. TEAM

	First Year	Second Year	Third Year	Fourth Year	Total
Males	10	6	3	1	20
Females	8	6	0	2	16

TABLE III
NUMBER OF ATHLETES COACHED BY
UNIVERSITY AND CLUB COACHES

	Athletes Coached by University Coaches	Athletes Coached By Club Coaches	Total
Males	9	11	20
Females	6	10	16

TABLE IV
WEEKLY AVERAGES OF TRAINING HOURS AND SESSIONS
DURING PRE-COMPETITIVE AND COMPETITIVE SEASONS
FOR MALE AND FEMALE GROUPS

	PRE-COMPETITIVE SEASON		COMPETITIVE SEASON	
	Hours	Sessions	Hours	Sessions
Males	9.94	5.16	10.08	5.21
Females	9.22	5.76	9.13	5.44

Athletes spend a certain amount of time training for and competing in their respective events. This is referred to as the total time. Table V illustrates the percentages of the total time that athletes estimated they spent in training.

TABLE V
PERCENTAGES OF THE TOTAL TIME SPENT
IN TRAINING BY MALE AND FEMALE ATHLETES

	60 - 70 Percent	70 - 80 Percent	80 - 90 Percent	90 - 95 Percent
Males	1	1	9	9
Females	3	2	7	4

Feedback

Feedback, or positive feedback, for the purpose of this study is regarded as that kind of information, from the coach, that is constructively helpful to the athlete's training performance.

The purpose on this variable, was to obtain measures of the extent to which athletes prefer feedback from the coach, and the extent to which feedback is actually provided by the coach in specific and non-specific types of training.

The relationship between the athletes' preferences and what actually occurs in the training environment, was then established with each of the two coefficients previously described.

Coactive Situations

Coactive Situations involve other athletes. The purpose on this variable was to obtain measures of the extent to which athletes prefer to train with, or without, other athletes, and the extent to which athletes actually train with, or without, other athletes in specific and non-specific types of training.

The relationship between athletes' preferences and actual occurrences was established on each of the two coefficients.

Program Involvement

This variable measures the extent to which athletes prefer to participate, or be involved, with the coach and the extent to which athletes are actually involved with the coach in the designing and evaluative processes of their training programs.

The relationship between athletes' preferences and actual

occurrences was established on each of the two coefficients previously described.

Differences Between Male and Female Coefficients

Fisher's Zr scores (Ferguson, 1976, p. 493) were used to determine if the male and female coefficients, on each variable, were significantly different from each other.

I. RESULTS

In the tables that follow the letter M indicates male athletes, and the letter F indicates female athletes.

Tables VI (A and B) illustrate the two coefficient results, for males and females, on the FEEDBACK variable.

TABLE VI-A
FEEDBACK TRUE AGREEMENT RESULTS
FOR MALE AND FEMALE ATHLETES

	T.A. Coefficient	T-Value	
M	.16	0.687	NS
F	.27	1.049	NS

TABLE VI-B
FEEDBACK AGREEMENT DISPLACEMENT RESULTS
FOR MALE AND FEMALE ATHLETES

	A.D. Coefficient	T-Value	
M	.56	2.867	S ($p > .05$)
F	.88	6.932	S ($p > .05$)

Tables VII (A and B) illustrate the coefficient results of COACTIVE SITUATIONS for male and female groups.

TABLE VII-A

COACTIVE SITUATIONS TRUE AGREEMENT
RESULTS FOR MALE AND FEMALE ATHLETES

	T. A. Coefficient	T-Value	
M	.53	2.651	S ($p > .05$)
F	.48	2.047	NS

TABLE VII-B

COACTIVE SITUATIONS AGREEMENT DISPLACEMENT
RESULTS FOR MALE AND FEMALE ATHLETES

	A. D. Coefficient	T-Value	
M	.85	6.845	S ($p > .05$)
F	.82	5.360	S ($p > .05$)

Tables VIII (A and B) illustrate the two coefficients results of PROGRAM INVOLVEMENT for the male and female athletes.

TABLE VIII-A

PROGRAM INVOLVEMENT TRUE AGREEMENT
RESULTS FOR MALE AND FEMALE ATHLETES

	T. A. Coefficient	T-Value	
M	.22	.956	NS
F	.25	.966	NS

TABLE VIII-B

PROGRAM INVOLVEMENT AGREEMENT DISPLACEMENT
RESULTS FOR MALE AND FEMALE ATHLETES

	A. D. Coefficient	T-Value	
M	.43	2.020	NS
F	.65	3.200	S ($p > .05$)

Differences Between Male and Female Coefficients

The following tables show the differences between male and female coefficients on the three variables.

Tables IX (A and B) illustrate the FEEDBACK differences between male and female coefficients.

TABLE IX-A

FEEDBACK TRUE AGREEMENT DIFFERENCE
BETWEEN MALES AND FEMALES

	T. A. Coefficient	Zr Value	Z Value	
M	.16	.015		
F	.27	.025	.027	NS

TABLE IX-B

FEEDBACK AGREEMENT DISPLACEMENT DIFFERENCE
BETWEEN MALES AND FEMALES

	A. D. Coefficient	Zr Value	Z Value	
M	.56	.633		
F	.88	1.376	2.0166	S ($p > .05$)

Tables X (A and B) illustrate the differences on COACTIVE SITUATIONS between male and female coefficients.

TABLE X-A

COACTIVE SITUATIONS TRUE AGREEMENT DIFFERENCE
BETWEEN MALES AND FEMALES

	T. A. Coefficient	Zr Value	Z Value	
M	.53	.590	.181	NS
F	.48	.523		

TABLE X-B

COACTIVE SITUATIONS AGREEMENT DISPLACEMENT
DIFFERENCE BETWEEN MALES AND FEMALES

	A. D. Coefficient	Zr Value	Z Value	
M	.85	1.256	.268	NS
F	.82	1.157		

Tables XI (A and B) illustrate the differences on PROGRAM INVOLVEMENT between male and female coefficients.

TABLE XI-A

PROGRAM INVOLVEMENT TRUE AGREEMENT
DIFFERENCE BETWEEN MALES AND FEMALES

	T. A. Coefficient	Zr Value	Z Value	
M	.22	.229	.070	NS
F	.25	.255		

TABLE XI-B

PROGRAM INVOLVEMENT AGREEMENT DISPLACEMENT
DIFFERENCE BETWEEN MALES AND FEMALES

	A. D. Coefficient	Zr Value	Z Value	
M	.43	.040		
F	.65	.775	1.994	S ($p > .05$)

Summary

The hypothesis for each variable, for male and female groups, was that there would be no significant relationship between what athletes prefer and what occurs or what athletes receive, in the training environment. The three variables were FEEDBACK, COACTIVE SITUATIONS and PROGRAM INVOLVEMENT.

The True Agreement results, for males, on the variables of FEEDBACK and PROGRAM INVOLVEMENT revealed no significant relationships between athletes' preferences and actual occurrences. The True Agreement results on COACTIVE SITUATIONS produced a significant relationship.

On the basis of the True Agreement results, for females, there is no significant relationship between preferences and actual occurrences on all three variables.

Male Agreement Displacement results, on the variable of PROGRAM INVOLVEMENT, produced no significant relationship between athletes' preferences and actual occurrences. On the variables of FEEDBACK and COACTIVE SITUATIONS, for males, there is a significant relationship between preferences and actual occurrences.

Female Agreement Displacement results revealed significant

relationships between preferences and actual occurrences on all three variables.

Male and female Agreement Displacement coefficients, on the variables of FEEDBACK and PROGRAM INVOLVEMENT were the only coefficients to be significantly different ($p > .05$) from each other.

II. DISCUSSION

Feedback

The True Agreement results, for male and female groups, revealed that there is no significant relationship between athletes' preferences and what actually occurs for the athlete from the coach. Therefore, the adopted hypothesis is accepted. The Agreement Displacement results, for males and females, show that there are significant relationships between athletes' preferences and actual occurrences of feedback from the coach in specific and non-specific types of training. Agreement Displacement t-values of 2.867 ($p > .05$) for the male group, and 6.932 ($p > .05$) for the female group, necessitated rejection of the hypothesis for this variable.

There were some athletes who registered great discrepancies between preferences and actual occurrences of feedback from the coach (APPENDIX B: 1M, 2M, 6M, 13M, 15M; p. 75). For those athletes, it is possible that the coach may not be providing feedback, to the athlete, as often as the coach thinks. It is also possible that the coach may be overestimating his efforts, or is not substantially evaluative of his efforts, with those athletes. There are other possibilities.

One of the most common problems in track and field athletics is the large number of athletes that a coach has under his guidance (Alderman, 1977). That is not intended as an easy way out of a problem for the coach but, rather, as a point of fact. However, just as the coach expects certain efforts from the athlete, it must be realized that the athlete has certain expectations of the coach.

Based on the male and female groups' results, it seems that coaches are cognizant of their roles and the importance they have with the athletes. It is important that coaches continue to be cognizant of their roles and the importance they have with each athlete. Also, it seems that athletes' preferences for feedback, in different types of training, are compatible with what the coaches may regard as being important and, which, require feedback.

In the training environment, preferences for feedback exist when certain specific and non-specific types of training are performed. Preferences for feedback vary from one athlete to another and from one type of training to another.

Males produced an Agreement Displacement coefficient of .53. Females produced their highest Agreement Displacement coefficient, .88, on this variable.

Coactive Situations

The True Agreement result, for males, necessitated rejection of the second hypothesis which stated, that there is no significant relationship between athletes' preferences and actual occurrences of training with, or without, other athletes in specific and non-specific forms of training. The females' True Agreement result upheld the

hypothesis.

The Agreement Displacement results, for male and female groups, caused rejection of the hypothesis. T-values of 6.845 ($p > .05$) for males and 5.360 ($p > .05$) for females, reveal a significant relationship between athletes' preferences and actual occurrences on this variable.

These results suggest that in situations that involve training with team-mates or other athletes, an athlete is able to achieve his or her preferences. This achievement may be understood further in view of the many athletes that are involved in the training environment. As such, an athlete can gravitate to those situations and satisfy, to a significant degree, those training situations when he or she prefers to train with other athletes. Additionally, an athlete can gravitate to those situations when he or she prefers to train without other athletes.

Male subjects produced their highest Agreement Displacement coefficient, .85, on this variable. Females had an Agreement Displacement coefficient of .82.

Program Involvement

This was the second variable that involves the coach in this study. The other variable was FEEDBACK. On the basis of the True Agreement results, for males and females, the third hypothesis was accepted. That hypothesis stated that there is no significant relationship between athletes' preferences to be involved with the coach, and actual involvement with the coach in the designing and evaluative processes of their training programs.

The Agreement Displacement result, for the male athletes with a mean age of 20.5 years and an average of 41.9 months experience in

track and field, upholds the third hypothesis.

The females' Agreement Displacement result causes rejection of the hypothesis. A t-value of 3.200 ($p > .05$) reveals a significant relationship between female athletes' preferences and actual occurrences on this variable. The female group had a mean age of 20.3 years, and an average of 35.8 months experience in track and field.

Both male and female groups produced their lowest Agreement Displacement coefficients, .43 and .65 respectively, on this variable. The results, particularly for the male group, can be partly understood in view of the many athletes that a coach might handle in the training environment. Additionally, time is an important factor. There is much that has to be done, in the training environment, in the relatively little time that is available to the athletes and the coach. Therefore, involving the athletes in program designing to a greater extent, might be considered, by the coach, a low priority in view of the other tasks he has to perform. Consequently, little time is afforded the male athlete, in particular, to meet and discuss with the coach his training program. The author wishes to direct the reader to the discussion on "Differences Between Male and Female Coefficients" which provides further explanation of the male and female results on this variable.

Differences Between Male and Female Coefficients

Statistically significant differences occurred from the Agreement Displacement results on the variables of FEEDBACK and PROGRAM INVOLVEMENT. It is interesting to note, that on the coach related variables of FEEDBACK and PROGRAM INVOLVEMENT, the female group's True Agreement and Agreement Displacement coefficients were higher than the

male group's coefficients. On the COACTIVE SITUATIONS variable, the opposite occurred, but the groups' coefficients were not significantly different from each other.

The following discussion offers plausible reasons for the transpiration of significant sex differences.

The most obvious difference is the sizes of the two groups. The male group had twenty subjects, and the female group had sixteen subjects. That difference, by itself, offers little in explaining the significant sex differences on two of the three variables, and a reversal of the trend on the variable of COACTIVE SITUATIONS. It must be remembered that athletes participate in sports for different reasons (Coutts, 1968; Usher, 1975, p. 13). As such, preferences or expectations can vary from one athlete to another. That fact, together with other data, may provide the best explanation of the results between the male and female groups.

Apart from their experiences with the university team, no less than ten of eighteen male subjects, or fifty percent of that experimental group, indicated they have had track and field competitive experience ranging from senior provincial to international championships. From the female group, six of the sixteen subjects, or less than thirty-eight percent of that group, have had similar competitive experiences.

In a study (Swan, 1978), that in part collected coaches' evaluations of the differences between superior and lesser university track and field performers, the following behaviours favoured the superior performers:

1. they work most consistently and diligently, effectively;
2. selfishness;

3. they compete well.

The six athletes and three coaches who were involved in that study (Swan, 1978), were also associated with the University of Alberta track and field team. The second behaviour - selfishness - concerns this discussion. For the purpose of further discussion, those athletes who have competed in provincial, national or international competition are considered as superior performers.

When the theory of selfishness is applied to the number of superior performers in each group in this study, together with the average track and field experience of each group, it offers more plausible explanations for the differences between male and female coefficients.

On the coach related variables, the coach has to make, possibly, more effort to significantly satisfy the preferences of the superior athletes. The aforementioned data, possibly, accounts for the significant differences between male and female coefficients and why females have higher coefficients on the two coach related variables.

Although there is no significant difference between male and female coefficients on the COACTIVE SITUATIONS variable, the male subjects recorded higher coefficients. Because of the characteristics already mentioned about the male group, it seems that the members of that group were more assertive in satisfying their preferences on that variable. The COACTIVE SITUATIONS variable involves the athlete with other athletes - peers - rather than the coach. Additionally, the male group's True Agreement and Agreement Displacement results produced significant relationships between preferences and actual occurrences. For the female group, only Agreement Displacement results produced a

significant relationship.

Summary

Perfection, in certain situations, is an ideal that most people would like, possibly, to achieve. However, because of the complexities that exist in human relationships, perfection may be seldom achieved. Speculatively, a tolerance factor is accepted, or accomodated, in most areas of human life.

When the True Agreement coefficient is aligned with perfection, the results that reveal no significant relationships between preferences and occurrences are not surprising. Particularly, when True Agreement can be interpreted as satisfying all preferences all the time. Therefore, the True Agreement result that reveals a significant relationship between preferences and actual occurrences indicates a powerful result.

When Agreement Displacement is aligned with a tolerance factor, the results cater to a certain degree of discrepancy between preferences and actual occurrences. Those results, favourable or unfavourable on the variables examined in this study, are considered, by the author, to reflect a realistic appraisal of some of the human dynamics that operate in the training environment. Those results, by comparison to the True Agreement results, are of more practical worth to coaches in the sport of track and field. The Agreement Displacement results are appropriate to a sport situation that involves many different human interactions, different preferences or expectations and many athletes in different events.

The Agreement Displacement coefficients on the variable of

COACTIVE SITUATIONS, for males and females, produced significant relationships between preferences and actual occurrences. Those results caused rejection of the second hypothesis, which stated that no significant relationship exists between athletes' preferences to train with, or without, other athletes and actual occurrences of training with, or without, other athletes in specific and non-specific forms of training.

A large number of athletes can be found in the training environment. An athlete, if he or she desires, can find training compatibility with other athletes. As such, coactive involvement, in the training environment is to be valued as an important vehicle to the athlete's training in certain forms of training. Although athletes have their own selection process in this area, it could be helpful for the coach to be sensitive to the different potentials in various coactive training situations for the athlete.

On the coach related variable of FEEDBACK, the male and female Agreement Displacement results caused rejection of the first hypothesis. That hypothesis stated that there is no significant relationship between the amount of attention and feedback preferred from the coach and the actual amount of attention and feedback provided by the coach. Preferences can vary from one athlete to another and from one type of training to another. The findings support writings pertaining to feedback.

In the area of feedback Robb (1970) has pointed out that there is no single optimum schedule for all skills. Furthermore, Robb (1970) added, each task must be analysed in relationship to the athlete's abilities, capabilities and desires. Practice with proper feedback yield the most beneficial results.

Practice does not, of course, make perfect, but it is a prerequisite of perfection. In order to achieve the highest levels of skilled performance there are frequently lengthy periods of acquisition ... Even if individual differences were to be held constant the length of practice would be unlikely to assume importance on its own. What is far more significant is the quality of the reinforcing contingencies available during practice for components of the skill (Dickinson, 1977, p. 87).

The most important aspect is that meaningful practice with proper augmented feedback produces desirable effects on the athlete's training performance (Annett, 1959; Cratty, 1973; Del Rey, 1970).

In the area of program designing Lersten (1971), as pointed out by Alderman (1977), states that in designing a training program there should be regard for the athlete's likes and dislikes. Usually, Lersten (1971) continues, programs are applied to everyone regardless of their:

1. physical condition,
2. individual rate of improvement,
3. psychological "orientation",
4. likes and dislikes.

Cratty (1973, p. 53) recommends that the coach who works with individual-sport athletes should accommodate individual differences and preferences. Carron and Chelladurai (1978) mention the importance of considering and catering to the preferences of the athlete.

The Agreement Displacement result for the female group supports the recommendations of Cratty (1973) and Carron and Chelladurai (1978), and Lersten's (1971) regard for the athlete. The female group's result indicate a significant relationship ($p > .05$) between preferences and actual occurrences on the PROGRAM INVOLVEMENT variable. The result

causes rejection of the third hypothesis. Additionally, but in the area of industrial psychology, Hemphill (1950) found that setting of goals, not for, but with individual workers was the most effective of all devices for increasing production (Doherty, 1976, p. 44).

Hemphill's (1950) finding that collaborative goal setting is "... the most effective of all devices for increasing production" is debatable in the area of amateur track and field athletics, but there is no doubt that it is desirable.

The coach plays a very important role in relieving the athlete of the burden of responsibility for planning and making decisions that quite often he is neither ready nor willing to make (Doherty, 1976, p. 24). This is not only obviously true for beginning athletes, but also for some athletes of long experience at high performance levels. Doherty (1976, p. 25) continues that what began as mere helpful relief has been taken for granted by the coach, quite apart from its uses for the athlete. The male group's Agreement Displacement result, for this study, seems to support the latter. That group's result upholds the third hypothesis, which states that there is no significant relationship between athletes' preferences to be involved with the coach in designing and evaluating their training programs, and actual involvement with the coach in designing and evaluating their training programs.

Although there can exist no significant relationship between athletes' preferences and what occurs for athletes in a particular aspect of training, that does not necessarily preclude further participation by the athlete. It is possible, though, that the athlete may not articulate his concerns with the coach. It is possible that an athlete may seek resolve with another person. The important matter

is that the coach should be aware of the fact that a high level of unsatisfaction with some environmental conditions could produce detrimental effects on learning and performance (Desharnais, 1975).

Athletes spend a considerable amount of time training at their respective events. Eighteen of the twenty male subjects, and eleven of the sixteen female subjects spent an estimated eighty percent or more of the time, dedicated to their events, in the training environment. The other twenty percent, or less, is spent in formal competitions. The training environment is, therefore, very important. Practice sessions afford the coach many opportunities to either motivate or "turn off" or to prepare or confuse the athletes with whom he is dealing (Cratty, 1973, p. 45).

Athletes do have preferences in the training environment. Preferences vary in strength and from one training situation to another. Five of the six Agreement Displacement coefficients, for males and females, produced significant relationships between preferences and actual occurrences.

CHAPTER V
SUMMARY AND CONCLUSIONS

Summary

The primary purpose of the study was to examine the relationship between athletes' preferences and actual occurrences on the three variables in the training environment. Thirty-six, out of forty, athletes returned completed questionnaires. The two experimental groups consisted of twenty male and sixteen female track and field athletes. All subjects were members of the University of Alberta track and field team. Eleven of the male subjects and ten of the female subjects were coached by Edmonton club coaches. The competitive levels, for both male and female groups, ranged from no previous competitive experience to international competition.

A questionnaire, with a Likert type scale, was used to collect the data on the three dependent variables. The three variables were FEEDBACK, COACTIVE SITUATIONS and PROGRAM INVOLVEMENT. Each variable consisted of six paired statements. The hypothesis adopted for each variable was that no significant relationship exists between athletes' preferences and what actually occurs.

True Agreement and Agreement Displacement coefficients and calculation of the t-values satisfied the analysis required for the study. Fisher's Zr transformation values were used to measure the difference between male and female coefficients on each variable.

Conclusions

The female group's True Agreement results failed to reject the hypothesis on each of the three variables. The male group's True Agreement results upheld the hypothesis on the FEEDBACK and PROGRAM INVOLVEMENT variables. The male group's True Agreement result for COACTIVE SITUATIONS caused rejection of the hypothesis.

The following findings are derived from the Agreement Displacement results.

1. On the variable of FEEDBACK:

- (a) there is a significant relationship between athlete's preferences for feedback from the coach in certain types of training, and actual occurrences of feedback from the coach in those training situations, for male and female groups.

2. On the variable of COACTIVE SITUATIONS:

- (a) there is a significant relationship, for male and female groups, between athletes' preferences to train with, or without, other athletes in certain types of training, and the extent to which they actually train with or without, other athletes in those same types of training.

3. On the variable of PROGRAM INVOLVEMENT:

- (a) there is no significant relationship, for the male group, between athletes' preferences to be involved with the coach in program designing, and the extent to which they are involved with the coach in the designing of their training programs;

(b) there is a significant relationship, for the female group, between preferences and actual involvement.

4. Male and female groups' Agreement Displacement coefficients were significantly different from each other, on the variables of FEEDBACK and PROGRAM INVOLVEMENT.

Limitations of the Study

Less than half of the subjects who participated in the study were coached by the University of Alberta coaching staff. As such, the results do not reflect, accurately, the relationship between the subjects and one specific coach or coaching staff on the coach related variables. Another aspect that limited the study was the sizes of the sample groups. Prior to the start of the 1978-79 indoor track and field season, more than ninety athletes showed an active interest to represent the University of Alberta in track and field. In February, 1979, when data for the study was collected, and the indoor competitive season at least seven weeks old, the number of active university track and field athletes numbered less than fifty. It was that situation that determined the number of subjects who participated in the study. Larger sample groups, from the same university team, were desired.

The answers to a few statements necessitated adjustments for a number of subjects. For example, view the second pair of statements on FEEDBACK (APPENDIX A, p. 69). For subject IM (APPENDIX B, p. 75) the answer to statement six is "Often". "Often" is worth a numerical value of four. If subject IM's answer to statement seventeen had been "Always", which is worth a numerical value of five, the corrected answer for him would have been four. A numerical value of four indicates

in that situation, complete agreement. Since subject IM's answer to statement seventeen was "Seldom", which is three numerical values less than "Always", the corrected value was, three less than four, one. The eventual numerical values for statements six and seventeen, for subject IM, were four and one respectively.

No correction to the answer was necessary if a subject had answered "Always" for statement six, and "Always", or another alternative, for statement seventeen. Similar adjustments were made to:

- (i) statement four paired with statement five;
- (ii) statements nine and fifteen when paired with statement seven;
- (iii) statement nine with statement eight; and
- (iv) statement fifteen with statement twelve.

If the answer to statement six had been "Seldom" and the answer to statement seventeen had been "Seldom", theoretically, the corrected value for statement seventeen should have been, three less than two, minus one. However, in such a case the lowest numerical value given was one. Therefore, the numerical values for some paired statements reflected an incorrect numerical relationship. Paired values of that type occurred only on the FEEDBACK variable for both experimental groups.

Paired values of that type occurred twice for the female group, but would not alter the significance of the results. For the male group, there were thirteen pairings of that nature. Of those thirteen paired responses ten, as presented in the results, positively affected either the True Agreement or Agreement Displacement coefficient. Two of the ten paired responses affected the True Agreement coefficient. A 'no significant relationship', between preferences and actual occur-

rences, has already been established for that coefficient.

The ten paired responses should have fallen outside the Agreement Displacement boundary and, consequently, should have altered and lowered the Agreement Displacement coefficient to .47. An Agreement Displacement coefficient of .47 produces a t-value of 2.259 and results in a significant relationship ($p > .05$) between preferences and actual occurrences. The Agreement Displacement coefficient of .56, shown in the study, also produced a significant relationship ($p > .05$) between preferences and actual occurrences. Therefore, the significant relationship on the FEEDBACK variable, for the male group, remains as presented.

Recommendations

1. Each event in track and field has its special characteristics. Therefore, it may be necessary not only to improve the questionnaire used in this study, but produce measuring instruments that are specific to individual track and field events, or events with similar demands. Results from that kind of research would then be specific to the subjects in a particular event.
2. With the use of event specific instruments, the coach and athlete can identify, very specifically, those aspects of training during the different training phases that are highly important. From that, more pertinent findings can be obtained.
3. Selfishness was explained as a contributing factor to the significant differences between male and female coefficients. The Theory of selfishness as a characteristic of superior athletes is interesting. Investigation is necessary to validate the occurrence of that behaviour in superior performers and other athletes.

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APPENDICES

APPENDIX A
THESIS QUESTIONNAIRE

Introduction To The Questionnaire

The following information accompanied each questionnaire:

This study is an attempt to investigate if track and field athletes have preferences in the training. Should preferences exist, then it is hoped that some measures of the strength of those preferences are obtained. The extent to which situational preferences are met in the training environment, is also measured.

Therefore, the information obtained from this study can contribute to making the training environment more productive and beneficial to both the athlete and the coach.

There are no right or wrong answers. There is no time limit to complete the questionnaire. However, your honest answer is important for the success of this study.

Please do not discuss the questionnaire with other persons. All responses will be kept in strictest confidence.

	ALWAYS	OFTEN	OCCASIONALLY	SELDOM	NEVER	DO NOT KNOW	DOES NOT MATTER
1. During the precompetitive season I trained, on average () hours a week.							
2. During the competitive season I train, on average () hours a week.							
3. I prefer to train by myself when I perform something specific to my event							3.
4. I receive attention and feedback from the coach on those occasions when I expect it at training . . .							4.
5. I prefer to have attention and feedback from the coach at every session							5.
6. I prefer to have attention and feedback from the coach on occasions when training is specific to my event							6.
7. I prefer to have a relationship with the coach that allows me to discuss any aspect of my training with the coach							7.
8. I prefer a relationship that allows me to meet with the coach to plan future workouts							8.
9. I am pleased with the frequency of meetings between the coach and me to plan future workouts							9.
10. I prefer to have the coach spend time attending to me during training							10.

	ALWAYS	OFTEN	OCCASIONALLY	SELDOM	NEVER	DO NOT KNOW	DOES NOT MATTER	
11. I receive attention and feedback from the coach at training								11.
12. I prefer a relationship that allows me to meet with the coach to evaluate the effectiveness of my previous workouts . . .								12.
13. The coach designs my training program								13.
14. I receive attention and feedback from the coach on occasions when training is specific to my event								14.
15. I am pleased with the frequency that the coach and I meet to evaluate the effectiveness of my previous workouts								15.
16. I prefer to have the coach responsible for designing my training program								16.
17. I am satisfied with the amount of individual coaching that I receive								17.
18. I prefer to have attention and feedback from the coach on occasions when training is non-specific to my event.								18.
19. I participate in the designing of my training program								19.
20. I prefer to train with other athlete(s) when I perform something specific to my event. . . .								20.

	ALWAYS	OFTEN	OCCASIONALLY	SELDOM	NEVER	DO NOT KNOW	DOES NOT MATTER	
29. I train with other athlete(s) when I perform something specific to my event								29.
30. I train by myself when I perform something specific to my event. .								30.
31. I train by myself when I perform something that is non-specific to my event								31.
32. I train with other athlete(s) when I perform something non-specific to my event								32.

* This is a mistake as it appeared on the questionnaire. The correct number should have been 95. Any result that appeared in this category was added to the results in the '90 - 95 percent' category.

Paired Statements

The paired statements on each variable are listed below. The Arabic numerals indicate the positions of the statements in the questionnaire. The letter 'P' indicates the statements of preference, and AO indicates the statements of actual occurrence.

FEEDBACK		COACTIVE SITUATIONS		PROGRAM INVOLVEMENT	
P	AO	P	AO	P	AO
(i) 6 . . . 14		(i) 3 . . . 30		(i) 8 . . . 9	
(ii) 6 . . . 17		(ii) 20 . . . 29		(ii) 12 . . . 15	
(iii) 10 . . . 11		(iii) 23 . . . 32		(iii) 16 . . . 13	
(iv) 18 . . . 21		(iv) 27 . . . 31		(iv) 22 . . . 19	
(v) 18 . . . 17		(v) 23 . . . 30		(v) 7 . . . 9	
(vi) 5 . . . 4		(vi) 23 . . . 31		(vi) 7 . . . 15	

APPENDIX B

UNIVERSITY ELIGIBILITY YEAR OF SUBJECTS

AND

MALE RAW SCORES ON THE VARIABLES OF

FEEDBACK, COACTIVE SITUATIONS AND

PROGRAM INVOLVEMENT

MALE SUBJECTS

<u>Subject</u>	<u>Year Eligibility</u>
1M	3
2M	1
3M	1
4M	1
5M	1
6M	1
7M	4
8M	1
9M	1
10M	3
11M	2
12M	2
13M	2
14M	2
15M	1
16M	1
17M	2
18M	1
19M	2
20M	3

FEMALE SUBJECTS

<u>Subject</u>	<u>Year Eligibility</u>
1F	1
2F	2
3F	1
4F	2
5F	4
6F	1
7F	1
8F	2
9F	4
10F	1
11F	1
12F	2
13F	2
14F	2
15F	1
16F	1

MALE RAW SCORES FOR FEEDBACK

Subject: 1M			Subject: 2M			Subject: 3M			Subject: 4M			Subject: 5M			Subject: 6M		
	<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>
(i)	4	2		5	2		5	4		4	4		4	2		4	1
(ii)	4	1		5	3		5	4		4	4		4	2		4	2
(iii)	2	1		3	2		3	2		3	2		3	3		4	1
(iv)	3	1		3	1		3	2		2	2		3	1		4	1
(v)	3	1		3	1		3	2		2	2		3	1		4	2
(vi)	3	1		3	1		4	3		3	3		3	1		4	1

Subject: 7M			Subject: 8M			Subject: 9M			Subject: 10M			Subject: 11M			Subject: 12M		
	<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>		<u>P</u>	<u>AO</u>
(i)	5	4		DNM	3		5	5		5	4		4	3		4	3
(ii)	5	2		DNM	3		5	5		5	4		4	4		4	2
(iii)	5	3		2	1		3	5		5	4		3	4		3	3
(iv)	3	2		3	1		4	4		4	3		4	3		3	2
(v)	3	1		3	1		4	4		4	3		4	4		3	1
(vi)	5	4		2	1		4	4		4	3		4	4		4	3

MALE RAW SCORES FOR FEEDBACK (Continued)

	Subject: 13M		Subject: 14M		Subject: 15M		Subject: 16M		Subject: 17M		Subject: 18M	
	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	5	2	5	4	4	2	4	3	4	1	5	4
(ii)	5	2	5	4	4	2	4	3	4	1	5	3
(iii)	5	3	3	4	4	3	3	3	3	2	4	3
(iv)	4	1	1	1	4	2	3	2	2	1	2	1
(v)	4	1	1	1	4	2	3	2	2	1	2	1
(vi)	4	1	4	3	4	2	4	3	4	1	4	3

	Subject: 19M		Subject: 20M	
	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	5	2	5	3
(ii)	5	3	5	3
(iii)	5	3	3	3
(iv)	2	1	2	1
(v)	2	1	2	1
(vi)	5	2	1	1

MALE RAW SCORES FOR COACTIVE SITUATIONS

Subject: 1M		Subject: 2M		Subject: 3M		Subject: 4M		Subject: 5M		Subject: 6M	
<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	2	3	3	4	DNM	1	2	2	2	3	4
(ii)	4	3	3	2	DNM	4	4	3	4	3	4
(iii)	4	3	2	DNM	DNM	5	5	3	4	4	3
(iv)	2	3	4	DNM	DNM	1	1	2	2	2	3
(v)	2	3	3	3	DNM	1	2	2	2	2	4
(vi)	2	3	2	3	DNM	1	1	2	2	2	3

Subject: 7M		Subject: 8M		Subject: 9M		Subject: 10M		Subject: 11M		Subject: 12M	
<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	3	2	2	4	3	2	2	1	1	4	4
(ii)	3	4	4	3	5	4	4	5	5	3	2
(iii)	5	4	4	4	3	4	4	4	5	3	4
(iv)	1	2	2	3	3	2	2	1	1	2	2
(v)	2	1	2	4	3	2	2	1	1	2	4
(vi)	2	1	2	4	3	2	2	1	1	2	4

MALE RAW SCORES FOR COACTIVE SITUATIONS (Continued)

	Subject: 13M		Subject: 14M		Subject: 15M		Subject: 16M		Subject: 17M		Subject: 18M	
	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	4	4	5	5	1	2	2	2	3	2	3	2
(ii)	4	4	1	1	5	5	5	4	3	4	3	4
(iii)	5	4	3	3	5	4	4	4	4	4	4	4
(iv)	2	2	3	3	1	2	2	2	3	3	2	2
(v)	2	4	4	5	1	2	2	2	2	2	2	2
(vi)	2	2	4	3	1	2	2	2	2	3	2	2

Subject: 19M		Subject: 20M		
<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	
(i)	4	2	5	4
(ii)	2	4	DNM	4
(iii)	DNM	4	DNM	4
(iv)	DNM	2	DNM	2
(v)	4	2	4	4
(vi)	4	2	4	2

MALE RAW SCORES FOR PROGRAM INVOLVEMENT

Subject: 1M		Subject: 2M		Subject: 3M		Subject: 4M		Subject: 5M		Subject: 6M	
<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	4	2	3	1	5	DNK	3	DNK	3	1	3
(ii)	5	3	3	1	5	DNM	3	DNK	3	1	3
(iii)	2	3	4	5	3	5	4	5	4	4	4
(iv)	2	2	4	5	3	3	4	4	4	4	5
(v)	5	3	5	2	5	DNK	5	DNK	3	1	5
(vi)	5	3	5	2	5	DNM	5	DNK	3	1	5

Subject: 7M		Subject: 8M		Subject: 9M		Subject: 10M		Subject: 11M		Subject: 12M	
<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	DNM	DNM	4	1	5	5	4	2	5	3	1
(ii)	5	2	3	1	5	5	4	2	5	4	1
(iii)	4	5	3	5	2	3	4	4	5	2	5
(iv)	4	4	3	4	2	1	4	3	5	2	5
(v)	5	DNM	4	1	5	5	5	3	5	5	2
(vi)	5	2	4	1	5	5	5	3	5	5	1

MALE RAW SCORES FOR PROGRAM INVOLVEMENT (Continued)

	Subject: 13M		Subject: 14M		Subject: 15M		Subject: 16M		Subject: 17M		Subject: 18M	
	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	5	2	5	4	DNK	DNK	3	2	4	1	DNK	DNK
(ii)	5	2	3	1	DNK	DNK	4	3	4	1	DNK	DNK
(iii)	4	5	5	5	4	5	5	5	4	5	5	5
(iv)	4	4	5	4	4	5	5	4	4	4	5	5
(v)	5	2	5	4	5	DNK	5	4	5	2	4	DNK
(vi)	5	2	5	3	5	DNK	5	4	5	2	4	DNK

	Subject: 19M		Subject: 20M	
	<u>P</u>	<u>AO</u>	<u>P</u>	<u>AO</u>
(i)	5	1	2	DNK
(ii)	5	1	2	DNK
(iii)	3	4	2	2
(iv)	3	3	2	1
(v)	5	1	4	DNK
(vi)	5	1	4	DNK

APPENDIX C

EXAMPLES OF THE SPREAD OF
RAW SCORES AROUND THE
TRUE AGREEMENT DIAGONAL

COACTIVE SITUATIONS: THE NUMBER OF RAW SCORE
RESPONSES FOR MALE ATHLETES

			ACTUAL OCCURRENCES						
			5	4	3	2	1		
			A	O ₁	O ₂	S	N	DNK	DNM
P R E F E R E N C E S	5	A	4	5					
	4	O ₁	2	14	6	4			
	3	O ₂	1	8	9	5			
	2	S		4	4	27			
	1	N				9	7		
		DNK						0	
		DNM		3		2			2

The True Agreement coefficient is $(4 + 14 + 9 + 27 + 7 + 2) \div 120 = .53$

The Agreement Displacement coefficient is,

$$\frac{63 + (5 + 6 + 5) + (2 + 8 + 4 + 9)}{120} = .85$$

PROGRAM INVOLVEMENT: THE NUMBER OF RAW SCORE
RESPONSES FOR MALE ATHLETES

			ACTUAL OCCURRENCES						
			5	4	3	2	1		
			A	O ₁	O ₂	S	N	DNK	DNM
P R E F E R E N C E S	5	A	10	6	8	14	6	6	3
	4	O ₁	10	7	2	3	6	4	
	3	O ₂	2	2	2	1	11	2	
	2	S	2		2	2	2	2	
	1	N					0		
		DNK						4	
		DMK							1

The True Agreement coefficient is $(10 + 7 + 2 + 2 + 4 + 1) \div 120 = .22$

The Agreement Displacement coefficient is,

$$\frac{26 + (6 + 2 + 1 + 2) + (10 + 2 + 2)}{120} = .43$$



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